WE CLAIM:

1. A phenol oxidizing enzyme obtainable from Stachybotrys and having at least 80% identity to the phenol oxidizing enzyme having the amino acid sequence as disclosed in SEQ ID NO:2.

2. The phenol oxidizing enzyme of Claim 1 wherein said Stachybotrys includes *S.* parvispora, *S.* chartarum, S. kampalensis, S. theobromae, S. bisbyi, S. cylindrospora, S. dichroa, S. oenanthes and S. nilagerica.

3. The phenol oxidizing enzyme of Claim 1 having the amino acid sequence as disclosed in SEQ ID NO:2.

4. An isolated polynucleotide encoding the amino acid having the sequence as shown in SEQ ID NO:2.

5. The isolated polynucleotide of Claim 4 having at least 65% identity to the nucleic acid sequence disclosed in SEQ ID NO: 1 or SEQ ID NO:3.

6. The isolated polynucleotide of Claim 5 having the nucleic acid sequence as disclosed in SEQ ID NO:1.

7. The isolated polynucleotide of Claim 5 having the nucleic acid sequence as disclosed in SEQ ID NO:3.

8. An isolated polynucleotide capable of hybridizing to the polynucleotide having the sequence as shown in SEQ ID NO:1 under conditions of high stringency.

9. An expression vector comprising the polynucleotide of Claim 4.

10. An expression vector comprising the polynucleotide of Claim 5.

11. An expression vector comprising the polynucleotide of Claim 8.

12. A host cell comprising the expression vector of Claim 9, Claim 10, or Claim 11.

13. The host cell of Claim 12 that is a filamentous fungus.

14. The host cell of Claim 13 wherein said filamentous fungus includes Aspergillus species, Trichoderma species and Mucor species.

15. The host cell of Claim 13 that is a yeast.

16. The host cell of Claim 15 wherein said yeast includes Saccharomyces, Pichia, Schizosaccharomyces, Hansenula, Kluyveromyces, and Yarrowia species.

17. The host cell of Claim 13 wherein said host is a bacterium.

18. The host cell of Claim 17 wherein said bacterium includes Bacillus and Escherichia species.

19. A method for producing a phenol oxidizing enzyme obtainable from *Stachybotrys* in a host cell comprising the steps of:

(a) obtaining a host cell comprising a polynucleotide encoding said phenol oxidizing enzyme obtainable from Stachybotrys wherein said enzyme has at least 65% identity to the amino acid sequence disclosed in SEQ ID NO:2;

(b) growing said host cell under conditions suitable for the production of said phenol oxidizing enzyme; and

(c) optionally recovering said phenol oxidizing enzyme produced.

20. The method of Claim 19 wherein said phenol oxidizing enzyme is obtainable from a *Stachybotrys* including *S.* parvispora, *S.* chartarum, S. kampalensis, S. theobromae, S. bisbyi, S. cylindrospora, S. dichroa, S. oenanthes and S. nilagerica.

21. The method of Claim 19 wherein said phenol oxidizing enzyme is obtainable from S. chartarum and has the amino acid sequence as disclosed in SEQ ID NO:2.

22. The method of Claim 19 wherein said polynucleotide comprises the sequence as shown in SEQ ID NO:1 or SEQ ID NO:3.

23. The method of Claim 19 wherein said host cell includes filamentous fungus, yeast and bacteria.

24. The method of Claim 23 wherein said yeast includes Saccharomyces, Pichia, Schizosaccharomyces, Hansenula, Kluyveromyces, and Yarrowia species.

25. The method of Claim 23 wherein said filamentous fungus includes Aspergillus species, Trichoderma species and Mucor species.

26. The method of Claim 25 wherein said filamentous fungus is a species of Aspergillus.

27. The method of Claim 26 wherein the filamentous fungus is Aspergillus niger var. awamori.

28. The method of Claim 23 wherein said filamentous fungus is a species of Trichoderma.

29. The method of Claim 28 wherein said Trichoderma species is Trichoderma reseei.

30. A method for producing a host cell comprising a polynucleotide encoding a phenol oxidizing enzyme obtainable from Stachybotrys and having at least 65% identity to the amino acid sequence disclosed in SEQ ID NO:2 comprising the steps of:

(a) obtaining a polynucleotide encoding said phenol oxidizing enzyme;
(b) introducing said polynucleotide into said host cell; and
(c) growing said host cell under conditions suitable for the production of said phenol oxidizing enzyme.

31. The method of Claim 30 wherein said host cell includes filamentous fungus, yeast and bacteria.

32. The method of Claim 31 wherein said filamentous fungus includes Aspergillus species, Trichoderma species and Mucor species.

33. The method of Claim 32 wherein said Aspergillus species is Aspergillus niger var. awamori.

34. The method of Claim 32 wherein said Trichoderma species is Trichoderma reseei.

35. The method of Claim 31 wherein said yeast is a Saccharomyces species.

36. The method of Claim 35 wherein said Saccharomyces species is Saccharomyces cerevisiae.

37. The method of Claim 30 wherein said polynucleotide has at least 65% identity to the nucleic acid shown in SEQ ID NO:1 or SEQ ID NO:3.

38. The method of Claim 30 wherein said polynucleotide has the nucleic acid sequence as shown in SEQ ID NO:1 or SEQ ID NO:3.

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